

WHAT IS CLAIMED IS:

1. A water current measuring system comprising:

an ROV;

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an ADCP coupled to the ROV; and

a computer system for receiving and processing ADCP data and ROV data and displaying processed data in real time as the ADCP and ROV move through water;
wherein the processed data includes depth and heading data from the ADCP
data if such depth and heading data is of a sufficient quality.

2. The system of claim 1, wherein the face of the current profiler on which its
acoustic transducers are attached is downward-facing.

3. The system of claim 1, wherein the face of the current profiler on which its
acoustic transducers are attached is upward-facing.

4. The system of claim 1, wherein the system is used to measure water currents
in a deep-sea water column.

20 5. The system of claim 4, wherein the deep-sea water column is adjacent to a
drilling and/or production riser used in drilling for oil, gas, or other substances.

6. The system of claim 1, wherein the ADCP is shrouded.

25 7. The system of claim 1, further comprising a shroud coupled to and covering
the ADCP and including an opening for the transmission and receipt of signals by the
transducers of the ADCP.

8. A method for processing water current measurements in real time, comprising the steps of:

receiving depth and heading data from ROV;

receiving from an ADCP water current velocity data associated with depth

5 cells within a water column;

receiving depth and heading data from the ADCP if the depth and heading data of the ADCP is substantially free of interference;

processing the current velocity data from each depth cell into data associated absolute depth;

10 assigning absolute depth data to virtual bins;

processing the data for each bin; and

outputting the data at a regular interval.

9. The method for processing water current measurements of claim 8, further comprising the step of storing the depth and heading data received from the ROV or the ADCP.

10. The method for processing water current measurements of claim 8, further comprising the step of storing the current velocity data at a second regular time interval.

20 11. The method for processing water current measurements of claim 8, further comprising the step of manually stopping the gathering of data by the current profiler.

25 12. The method for processing water current measurements of claim 11, further comprising the step of storing the processed data for each bin.

13. The method for processing water current measurements of claim 8, wherein the current profiler is rigidly attached to the ROV; and
wherein the face of the current profiler on which its acoustic transducers are

30 attached is downward-facing.

14. The method for processing water current measurements of claim 8, wherein the current profiler is rigidly attached to the ROV; and wherein the face of the current profiler on which its acoustic transducers are attached is upward-facing.

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15. The method for processing water current measurements of claim 8, wherein the step of outputting the data at a regular interval comprises the step of providing a graphical display of the processed data.

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16. A method for measuring water currents in real time, comprising the step of receiving and processing data in real-time from an ADCP, including depth and heading data, as the ADCP is moving in the vertical direction through a water column.

5 17. The method of claim 16, wherein the ADCP is coupled to an ROV.

18. The method of claim 17 wherein the data is received and processed at a computer system remote from the ADCP.

10 19. The method of claim 17 wherein the step of processing the data comprises the step of converting data from the frame of reference of the ADCP to a fixed frame of reference.

15 20. The method of claim 17,
wherein the data is received and processed at a computer system remote from the ADCP; and
wherein the step of processing the data comprises the step of converting data from the frame of reference of the ADCP to a fixed frame of reference.

20 21. The method of claim 20, wherein the data received by the computer system for processing includes data indicative of the water current velocity in the profiling range of the ADCP.

25 22. The method of claim 20, wherein the data received by the computer system for processing includes data indicative of the water current heading in the vicinity of the ADCP.

23. The method of claim 20, further comprising the step of presenting a graphical display of the water current velocity through the water column.